

What is claimed is:

1. An optical keyboard for use in an electronic device to allow a user to input information in the electronic device, said optical keyboard comprising:

5 a light guide; and

a plurality of keys of dome-shaped optical elements formed on the light guide, such that light introduced to one end of an optical element spreads over at least a part of the said optical element and then substantially converges at another end of said optical element in a focusing pattern, and when said optical element is deformed by external pressure, the deformity changes the focusing pattern at the other end.

10

2. The optical keyboard of claim 1, further comprising:

one or more light sources, disposed in relation to the keys, for providing light to the optical elements.

15

3. The optical keyboard of claim 2, further comprising:

a plurality of photosensors, disposed in relation to at least some of the converging ends of the keys, for sensing light intensity of said converging ends of the corresponding optical elements according to the focusing pattern.

20

4. The optical keyboard of claim 3, wherein the plurality of keys comprises one or more individual keys and each of the individual keys is associated with

one of the light sources, which provides light to said individual key, and

one of the photosensors for sensing light intensity at the converging end of said

25 individual key.

5. The optical keyboard of claim 3, wherein the plurality of keys comprises a group of keys arranged in a two-dimensional matrix having n columns and m rows, with n and m being positive integers, each of the n columns and m rows of keys is associated with

30 one of the light sources disposed at one end of said column or row for providing light to the keys in said column or row, and

one of the photosensors disposed at another end of said column or row for sensing light intensity.

6. The optical keyboard of claim 1, wherein the light guide comprises a sheet of optical material.

5 7. The optical keyboard of claim 1, wherein the light guide comprises:
a first sheet of optical material having a first refractive index, and
a second sheet of optical material laminated to the first sheet, the second sheet of optical material having a second refractive index substantially lower than the first refractive index.

10

8. The optical keyboard of claim 1, wherein the light guide comprises:
a first sheet of optical material having a first refractive index,
a second sheet of optical material laminated to one side of the first sheet, and
a third sheet of optical material laminated to another side of the first sheet,

15 wherein the second sheet of optical material has a second refractive index substantially lower than the first refractive index, and the third sheet of optical material has a third refractive index substantially lower than the first refractive index.

20 9. The optical keyboard of claim 1, wherein the light guide comprises:
a sheet of optical material having a first refractive index, and wherein one or both sides of the sheet are coated with a coating material having a second refractive index substantially lower to the first refractive index.

25 10. The optical keyboard of claim 3, further comprising one or more optical filters disposed in relation to the photosensors for filtering out ambient light reaching the photosensors.

30 11. The optical keyboard of claim 2, wherein the light sources comprise one or more light-emitting diodes.

12. An electronic device, comprising:

an optical keyboard having a plurality of keys to allow a user to input information in the electronic device by pressing one or more keys, wherein the keys are dome-shaped optical elements such that light introduced to one end of a key spreads over at least a part of the corresponding optical element and then substantially converges at another end of the key;

5 one or more light sources, disposed in relation to the keys, for providing light to the keys; and

10 a plurality of photosensors, disposed in relation to at least some of the converging ends of the keys, for sensing light intensity at said converging ends of the keys, wherein when one or more of the keys are pressed, deforming the dome-shaped optical elements 15 of the pressed keys, the sensed light intensity is caused to change due to the deformity.

13. The electronic device of claim 12, wherein the plurality of keys comprises one or more individual keys and each of the individual keys is associated with

15 one of the light sources, which provides light to said individual key, and
 one of the photosensors for sensing light intensity at the converging end of said individual key.

14. The electronic device of claim 12, wherein the plurality of keys comprises a group 20 of keys arranged in a two-dimensional matrix having n columns and m rows, with n and m being positive integers, each of the n columns and m rows of keys is associated with
 one of the light sources disposed at one end of said column or row for providing light to the keys in said column or row, and

25 one of the photosensors disposed at another end of said column or row for sensing light intensity.

15. The electronic device of claim 12, wherein the dome-shaped optical elements are formed on a sheet of optical material.

30 16. The electronic device of claim 12, wherein the dome-shaped optical elements are formed on a first sheet of optical material having a first refractive index, and wherein the sheet is laminated to a second sheet of optical material having a second refractive index, which is substantially lower than the first refractive index.

17. The electronic device of claim 12, wherein the dome-shaped optical elements are formed on a first sheet of optical material having a first refractive index, and wherein the sheet is laminated between a second sheet of optical material having a second refractive

5 index and a third sheet of optical material having a third refractive index, the second and third refractive indices being substantially lower than the first refractive index.

18. The electronic device of claim 12, wherein the dome-shaped optical elements are formed on a sheet of optical material having a first refractive index, and wherein one or

10 both sides of the sheet are coated with a coating having a second refractive index substantially lower to the first refractive index.

19. The electronic device of claim 12, wherein the light sources comprise one or more light-emitting diodes.

15

20. The electronic device of claim 12, wherein the electronic device comprises a mobile terminal.

21. The electronic device of claim 12, wherein the electronic device comprises a personal digital assistant device.